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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/076,716 | 02/14/2002 | William R. Young | 125.010US01 | 2081 |

7590 06/09/2004

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EXAMINER

SALATA, ANTHONY J

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| | 2837 |

DATE MAILED: 06/09/2004

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 05242004

Application Number: 10/076,716
Filing Date: February 14, 2002
Appellant(s): YOUNG ET AL.

Scott Lundberg
For Appellant

EXAMINER'S ANSWER

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This is in response to the appeal brief filed May 17, 2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because applicant states that claims 1,2,4-16,22,26-31,33,34,46-48 stand or fall on their own merits as well as that the dependent claims stand or fall on their related independent claims.

As the independent claims 1,14,26,46 are the only claims addressed in this appeal, all rejected claims stand or fall on their related independent claims.

(8) *ClaimsAppealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

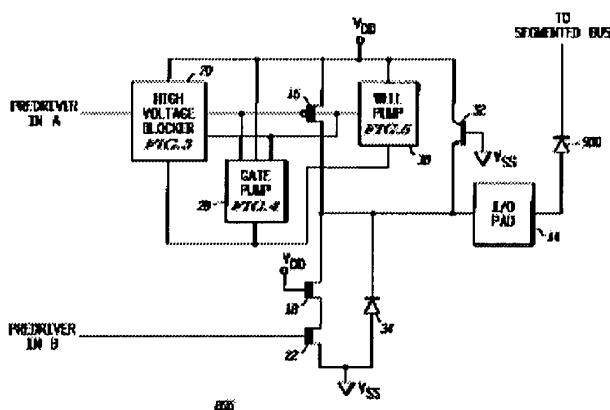
| | | |
|-----------|-------------|---------|
| 6,046,897 | SMITH et al | 4-2000 |
| 6,144,542 | KER et al | 11-2000 |

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1,2,4,5,14-16,46-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al (6046897).

Smith et al teaches in figures 1-9, a segmented bus system for ESD protection.

**FIG.9**

1,46) Bus lines BUS1,BUS2. Pad 14 connected to source, drain via 32,34. Figure 9

illustrates isolation diode 900. Charge pump 810,816.

2,28) Diodes 810,816 precharge higher than 3.3 V.

4,5,) Diode 900.

14-16) Figure 8 illustrates Bus lines BUS1,BUS2. Diode 900 couples pad 14. More than one pad may be present.

47) See figure 2.

Claims 10-13,22,26-31,33,34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al and Ker et al (6144542).

Smith et al does not illustrate the shared bus discharge.

Ker et al teaches that for effective ESD protection with separated power lines, it is advantageous to provide bi-directional diode strings between power lines to supply the ESD to a clamp to discharge multiple pads.

Figures 6-16 illustrate several embodiments of the Bus connections. The elements can be any number of controlled devices that provide directional control.

Thus, to utilize bi-directional connections between buses in an ESD system would have been an obvious engineering design choice to one of ordinary skill in the art in order to provide protection for multiple pads and reduce the number of diode strings.

Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al and applicants admitted prior art.

Applicant states on page 10-11 that any unidirectional device may be utilized as the steering diode. Thus, the substitution is considered a matter of convenience.

Claims 36-45,50-57 are allowed.

Claims 3,17-21,23-25,32,35,49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(11) Response to Argument

Applicant states that with respect to claims 1 and 14, Smith does not state the use of an active charge pump. Specifically " the passive diodes 810 and 816 are not the same as the active charge pumps of the present application.

The examiner does not contest this point as diodes are not active devices.

However, the claimed invention merely requires " a charge pump ... to precharge its associated electrostatic bus line..."

Nowhere in the claims or the instant specification, can the limitation of an active charge pump the same as that of pumps 120,122 as shown in figure 3 of the instant application, be seen. In fact the terminology of "active" in reference to the charge pump, does not appear in the specification.

In reference to Smith et al, figures 8,9 which illustrate elements 810,816

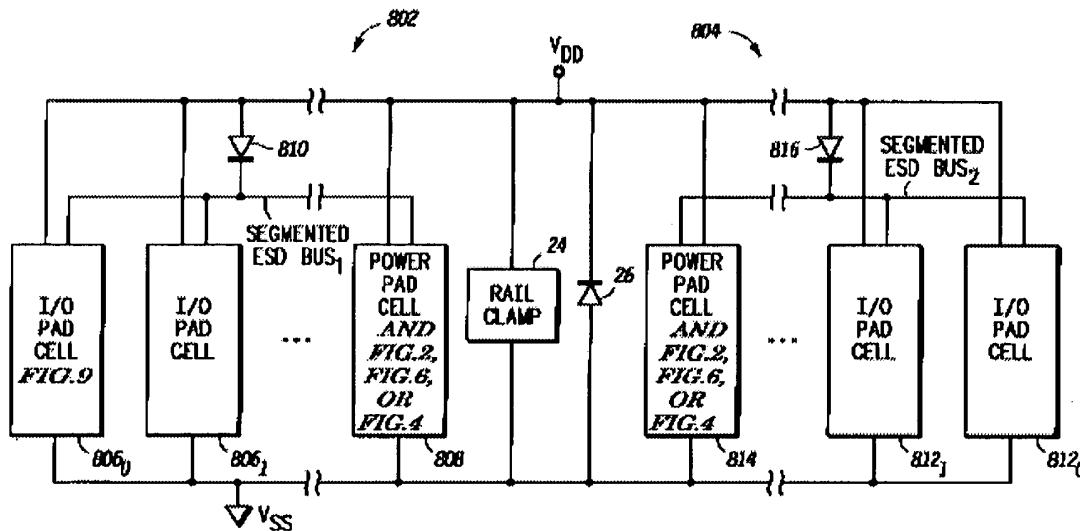


FIG.8

Column 13, lines 13-20 clearly state the operation of the elements 810,816 as precharging the segmented ESD buses during normal operation.

No other elements within claims 1,14 are contested by applicant.

Applicant states that regarding claim 46, precharging of the bus lines does not occur at a level beyond the signal voltage level expected to be applied to the integrated circuit.

Col. 13, lines 20-30 state the ESD is discharged to VDD, in the embodiment of a large positive voltage with respect to VDD, through VSS and diode 26, thus indicating 810,816 are not forward biased. Other embodiments such as an event below VSS (lines 53-65) are also discussed.

No other elements within claim 46 is contested by applicant.

Applicant states that regarding the 103 rejection of claim 26, a positive rail charge pump coupled to the positive ESD bus to a predefined voltage level is not shown by Smith et al or Ker et al and again states that diodes 810,816 are passive diodes that merely allow current to flow from supply VDD.

Again it is pointed out that Smith et al specifically states

Column 13, lines 13-20, the operation of the elements 810,816 as precharging the segmented ESD buses during normal operation.

Further, lines 20-30,53-65, as stated above, illustrate the flow during ESD events.

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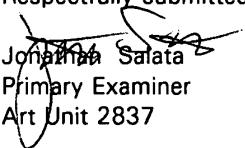
Smith et al further states the environment by stating that the I/O pads are prevented from seeing a capacitive load of the segmented ESD buses by the use of the precharging (lines 14-16).

Ker et al was applied to the claims to teach the use of bi-directional diode strings or any bi-directional device control. This teaching was not argued by applicant.

Thus, the prior art of record clearly illustrates the use of ESD (electro-static discharge) bus lines in an integrated circuit, which are pre-charged, thereby shunting the ESD to either VDD or VSS points which prevents the I/O pads from seeing the capacitive load of the segmented buses.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


Jonathan Salata
Primary Examiner
Art Unit 2837

ajs
May 26, 2004

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